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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/632,326	08/01/2003	Luis F. Barron	DP-309996	5218
22851	7590	06/25/2004	EXAMINER	
DELPHI TECHNOLOGIES, INC. M/C 480-410-202 PO BOX 5052 TROY, MI 48007			KWOK, HELEN C	
			ART UNIT	PAPER NUMBER
			2856	

DATE MAILED: 06/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/632,326	BARRON ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Helen C. Kwok	2856	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### **Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

1)  Responsive to communication(s) filed on \_\_\_\_.

2a)  This action is **FINAL**.                    2b)  This action is non-final.

3)  Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

4)  Claim(s) 1-22 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5)  Claim(s) \_\_\_\_\_ is/are allowed.  
6)  Claim(s) 1-22 is/are rejected.  
7)  Claim(s) \_\_\_\_\_ is/are objected to.  
8)  Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

9)  The specification is objected to by the Examiner.

10)  The drawing(s) filed on \_\_\_\_\_ is/are: a)  accepted or b)  objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)  The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a)  All b)  Some \* c)  None of:  
1.  Certified copies of the priority documents have been received.  
2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3.  Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1)  Notice of References Cited (PTO-892)  
2)  Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3)  Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date *February 5, 2004*.  
4)  Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.  
5)  Notice of Informal Patent Application (PTO-152)  
6)  Other: \_\_\_\_.

## DETAILED ACTION

### ***Claim Objections***

1. Claims 17-18 are objected to because of the following informalities. Appropriate correction is required.

In claim 17, line 1, the phrase "the act of" should be deleted.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-6, 14-18 and 19-22 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 5,872,307 (Brammer et al.).

With regards to claims 1-6, Brammer et al. discloses a knock sensor comprising, as illustrated in Figure 1, a sleeve; a threaded end established by the sleeve; a transducer disposed around the sleeve; a load washer disposed around the sleeve adjacent to the transducer; a nut threaded onto the sleeve to provide a compressive force on the load washer; a seal groove formed in the sleeve; a ring-shaped seal (i.e. O-ring) disposed in the seal. Furthermore, Brammer et al. suggests discloses a base wherein the seal groove is formed in the base; a lower and an upper terminal; a lower and an upper insulator; a housing. (See, column 2, line 56 to column 3, line 67).

With regards to claims 14-22, the claims are commensurate in scope with claims 1-6 and are rejected for the same reasons as set forth above.

4. Claim 7 is rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 4,345,558 (Yamaguchi et al.).

Yamaguchi et al. discloses a knock detecting apparatus comprising, as illustrated in Figures 2-4, at least one microprocessor 3.4; at least one ignition system 5 connected to the microprocessor; at least one knock sensor 2 connected to the microprocessor being sealed by a ring shaped seal 28. (See, column 3, line 59 to column 4, line 58).

#### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-6, 14-18 and 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over either U.S. Patent 4,964,294 (Kawajiri et al.) or U.S. Patent 5,965,804 (Sakamoto) in view of either U.S. Patent 4,343,187 (Kaji) or U.S. Patent 5,872,307 (Brammer et al.).

The references, Kawajiri et al. and Sakamoto, disclose a knock sensor comprising, a sleeve; a threaded end established by the sleeve; a transducer disposed around the sleeve; a load washer disposed around the sleeve adjacent to the transducer; a nut threaded onto the sleeve to provide a compressive force on the load washer; a seal groove formed in the sleeve. (See, Figure 1, column 2, line 31 to column 4, line 16 of Kawajiri et al; Figure 1, column 4, line 11 to column 5, line 54 of Sakamoto). The only difference between the prior art and the claimed invention is a ring-shaped seal disposed in the seal groove to prevent liquid from entering the knock sensor. The references, Kaji and Brammer et al., disclose a knock sensor having a ring-shaped seal (element 20 of Kaji; element 21 of Brammer et al.) disposed in a seal groove. It would have been obvious to a person of ordinary skill in the art at the time of invention to have readily recognize the advantages and desirability of employing a ring-shaped seal disposed in a seal groove as suggested by Kaji and Brammer et al. to the knock sensor of either Kawajiri et al. or Sakamoto to seal the sensor against the ingress of water, oil, dirt, dust or any other contaminant and to ensure no pressure can escape from the interior and to ensure integrity of the housing to the sleeve.

With regards to claims 2-5, Kaji and Brammer et al. further discloses a base wherein the seal groove is formed in the base; a lower and an upper terminal; a lower and an upper insulator; a housing. (As observed in the Figures).

With regards to claim 6, Kaji further discloses the ring-shaped seal is an O-ring.

With regards to claims 14-22, the claims are commensurate in scope with claims 1-6 and are rejected for the same reasons as set forth above.

7. Claims 8-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 4,345,558 (Yamaguchi et al.) in view of U.S. Patent 5,872,307 (Brammer et al.).

With regards to claims 8-13, Yamaguchi et al. does not explicitly disclose the structural elements of the knock sensor as presently claimed. Brammer et al. suggests the structural elements of the knock sensor, such as a sleeve; a threaded end established by the sleeve; a transducer disposed around the sleeve; a load washer disposed around the sleeve adjacent to the transducer; a nut threaded onto the sleeve to provide a compressive force on the load washer; a seal groove formed in the sleeve; a ring-shaped seal (i.e. O-ring) disposed in the seal; a base wherein the seal groove is formed in the base; a lower and an upper terminal; a lower and an upper insulator; a housing. It would have been obvious to a person of ordinary skill in the art at the time of invention to have readily recognize the advantages and desirability of employing the knock sensor (i.e. piezoelectric type) as taught by Brammer et al. as the knock sensor in the apparatus of Yamaguchi et al. since it is well known to use whatever type of knock sensor is available at the time of manufacturing, especially when Yamaguchi et al. recognizes that one can use a piezoelectric type knock sensor or a magnetic type knock sensor.

### ***Conclusion***

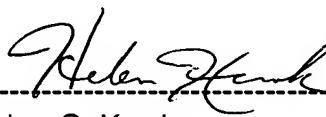
8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The references cited are related to knock sensors with different structural arrangements and a sealing member.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Helen C. Kwok whose telephone number is (571) 272-2197. The examiner can normally be reached on 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron E. Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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Helen C. Kwok  
Art Unit 2856

hck  
June 23, 2004